

# PATENT ABSTRACTS OF JAPAN

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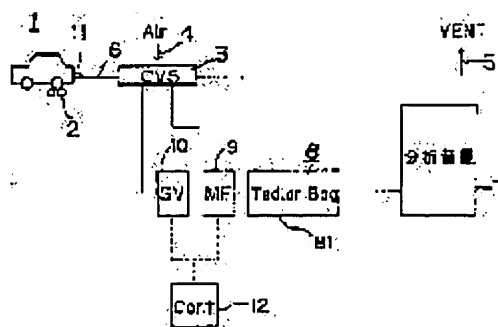
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## (54) APPARATUS FOR COLLECTING EXHAUST GAS OF AUTOMOBILE OR THE LIKE

### (57)Abstract:

**PURPOSE:** To shorten the analyzing time and to simplify an apparatus by connecting a collecting part to an exhaust pipe or a constant volume sampler(CVS) via a mass flow controller and a stopper valve and, doing only with the exhaust gas and air for background collection as a sample.

**CONSTITUTION:** An exhaust pipe 11 of an automobile 1 is connected to a CVS 3. The air is supplied to the CVS 3 from a suction port 4. An analyzing device 7 is communicated with the CVS 3 or a sample bag to analyze NOx, CO, CH4, etc. A collecting part 8 consists



of a detachable Tedlar bag 81 and is connected to the

CVS 3 via a mass flow controller (MF) 9 and a stopper valve(SV) 10. In order to perform the LA4 measurement,

the SV 10 is opened/closed in accordance with each step of the LA4 to collect the exhaust gas in the same bag 81 at 8. In this case, if the collecting time corresponding to a fixed coefficient is set in conformity to a conventional example of calculation whereby an analyzing result of the sample is multiplied by a fixed coefficient, the analyzing result can be used as it is.

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## LEGAL STATUS

[Date of request for examination]

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CLAIMS

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[Claim(s)]

[Claim 1] Exhaust gas uptake equipments, such as an automobile characterized by connecting the uptake section to an exhaust pipe or CVS through a massflow controller and a stop valve.

[Claim 2] Exhaust gas uptake equipments, such as an automobile characterized by having connected one massflow controller to the uptake section of the number of requests connected to an exhaust pipe or CVS through the pump through the stop valve, respectively, and connecting the one uptake section to this massflow controller.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to exhaust gas uptake equipments, such as an automobile.

[0002]

[Description of the Prior Art] The LA4 (C/H) mode currently used for motor exhaust measurement in the current United States consists of the following four phases, and exhaust gas uptake is performed with 1 and the 2 or 4th phase. Measured value is computed by analyzing this, respectively and multiplying each phase by the multiplier. Uptake of the six samples which carry out uptake as an object for background proofreading is carried out to exhaust gas and coincidence, and the air introduced into a CVS sampler is also analyzed.

[0003] In order to perform this actuation, an uptake bag is connected to an exhaust gas exhaust pipe through a suction pump, and it constitutes so that uptake may be carried out with a different uptake bag one by one corresponding to each phase. And it was analyzing separately about each bag [ finishing / uptake ].

[0004]

[Problem(s) to be Solved by the Invention] For this reason, the sample was extracted for every uptake bag and it analyzed, respectively, and measured value needed to be taken out, having applied the multiplier to each, the numerousness of measurement sizes and numerical processing took time and effort and time amount, and it was a very troublesome activity. Moreover, equipment also had to be enlarged.

[0005]

[Means for Solving the Problem] The sample which carries out uptake is substituted for two of the air for exhaust gas and background uptake in this invention. Conventional equipment so, in [ that ] carrying out \*\*\*\* use It is a thing aiming at using it conventionally, adding this equipment to equipment, and attaining shortening of analysis time amount, and simplification of equipment. It is characterized by connecting the uptake section to the 1st through a massflow controller and a stop valve at an exhaust pipe or CVS. It is characterized by having connected with one massflow controller through the stop valve at the uptake section of the number of requests connected [ 2nd ] to an exhaust pipe or CVS through the pump, respectively, and connecting the uptake section to this massflow controller.

[0006]

[Example] Hereafter, the example shown in drawing explains this invention to a detail. 1 is the automobile measured and is put under the dynamometer 2 control controlled by the controller in the front wheel thru/or rear wheel.

[0007] The exhaust pipe 11 of an automobile 1 is connected to the well-known constant volume sampler (it is called Following CVS) 3. Atmospheric air is made to flow into this CVS3 by the inlet 4.

[0008] CVS3 is open for free passage for an exhaust port 5 through exhausters, such as a turbo blower. 7 is considered as the configuration which connects with CVS3 or a sample bag (Tedlar Bag) by the analysis apparatus, and analyzes request components, such as NOx, CO, CH4, and THC.

[0009] 8 is the uptake section and uses the TEDORA bag 81 or a scavenger 82. Connection and balking of this uptake section 8 are enabled through the massflow controller 9 and the stop valve 10 at CVS3. 12 is a controller and is controlling the stop valve 10 and the massflow controller 9.

[0010] In case the operation discharges the exhaust gas discharged by the engine performance of an automobile 1 through an exhaust pipe 6, it is the same as that of equipment suction and conventionally [ carrying-out-uptake ] about exhaust gas in the uptake section 8 connected with an exhaust pipe 6 or CVS3.

[0011] According to each phase of LA4, uptake is repeated, respectively. In case it operates in the state of starting first, stop PARUBU 10 is opened and receipt uptake of the exhaust gas is carried out to the uptake section 8 through a massflow controller 9.

[0012] A stop valve 10 is closed after the fixed passage of time, and the uptake of exhaust gas is stopped. Next, a stop valve 10 is opened in another operational status, and uptake of the exhaust gas is carried out to the uptake section 8. Uptake of the exhaust gas is carried out in the state of [ another ] after a pause for 10 minutes.

[0013] although time amount defined in each of this phase is attracted, if a setup of this time amount sets up the time amount corresponding to a fixed multiplier according to the conventional example which applies and computes a fixed multiplier to the analysis result of the sample which carried out uptake in each phase of LA4 -- that analysis result -- the -- \*\*\*\* use can be carried out.

[0014] Moreover, if the example shown in drawing 3 is explained, the uptake bags 81, 81, and 81 of the uptake section 8 will be attached [ from CVS3 ] through a bulb, respectively with a suction pump 13.

[0015] Stop valves 14, 14, and 14 are formed corresponding to each uptake bags 81, 81, and 81, and the uptake bag 83 is formed in the passage 15 free [ attachment and detachment ] through one massflow controller 16. 17 is the controller of a massflow controller 16.

[0016] It is in charge of operation, the sample which carried out uptake is in the setup time corresponding to each mode as [ each uptake bag 81, 81 and 81 ] usual, and uptake of all the samples is carried out for the amount of samples corresponding to the multiplier to which \*\* also multiplies the analysis result of LA4 by stop valves 14, 14, and 14 one by one to the uptake bag 83 through a massflow controller 16. The example which changes to this uptake bag 83 and uses a scavenger 84 is shown in drawing 4 .

[0017]

[Effect of the Invention] According to this invention like the above, the uptake section is connected to an exhaust pipe through a massflow controller and a stop valve the 1st. Since it connected with one massflow controller through the stop valve at the uptake section of the number of requests connected [ 2nd ] to the exhaust pipe through the pump, respectively and the uptake section was connected to this massflow controller By carrying out uptake of the gas in three bags to one bag or a scavenger, analytic time and effort can decrease at once from 3 times.

[0018] Moreover, the collection of recapture can also be carried out to one bag or a scavenger from three bags already used. current 3 -- carrying out uptake only of the part corresponding to a multiplier, although a multiplier squares this bag corresponding to measurement mode -- one measurement -- a multiplier -- hanging -- a guide peg -- a result and the same measurement result are obtained the bottom.

[0019] When carrying out uptake of the uptake according to a multiplier to one bag from the beginning, it controls a massflow controller electrically and performs it. moreover, the thing for which a scavenger is used -- automation with an analysis apparatus -- being easy (it being able to be adapted in the approach of heating desorption) -- it becomes. Therefore, sample analysis in U.S. LA4 measurement mode can carry out very easily, and analytic speeding up and simplification can be attained.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] This invention one example approximate account Fig.

[Drawing 2] An example approximate account Fig. besides the same as the above.

[Drawing 3] An example approximate account Fig. besides the same as the above.

[Drawing 4] An example approximate account Fig. besides the same as the above.

[Drawing 5] Conventional example approximate account Fig.

[Description of Notations]

- 1 Automobile
- 2 Chassis Dynamometer
- 3 CVS
- 4 Inlet
- 5 Exhaust Port
- 6 Exhaust Pipe
- 7 Analysis Apparatus
- 8 Uptake Section
- 9 Massflow Controller
- 10 Stop Valve
- 11 Exhaust Pipe

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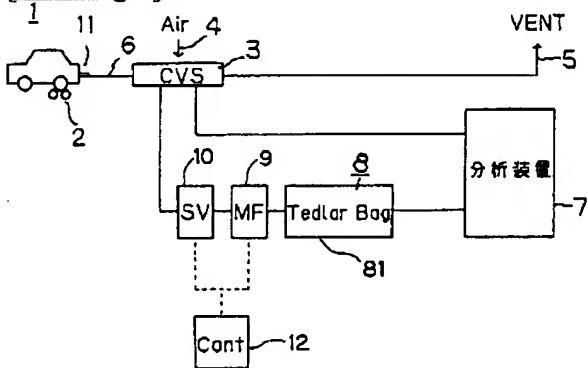
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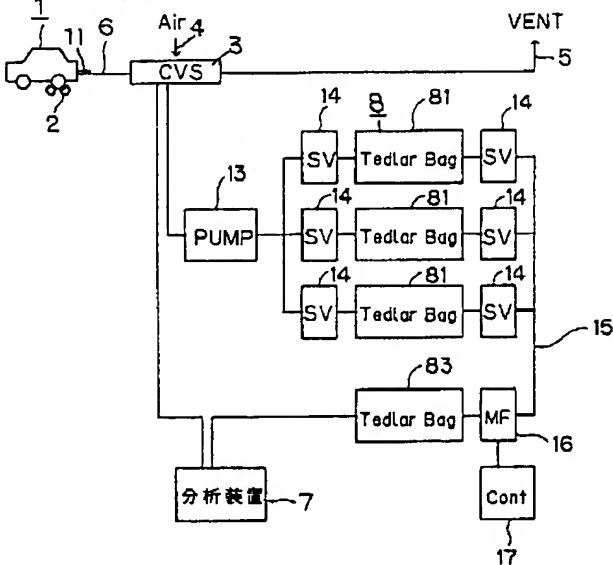
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## DRAWINGS

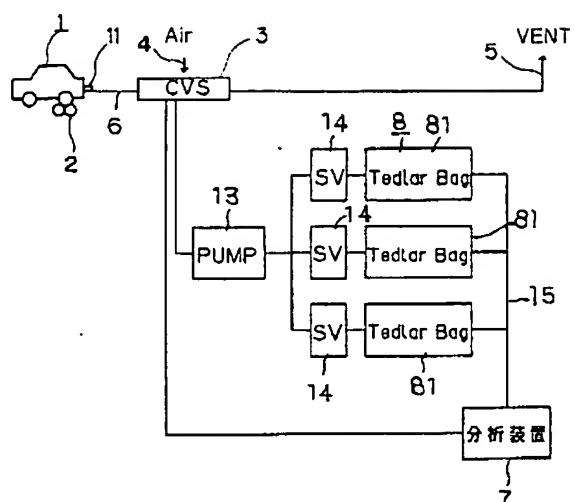
[Drawing 1]



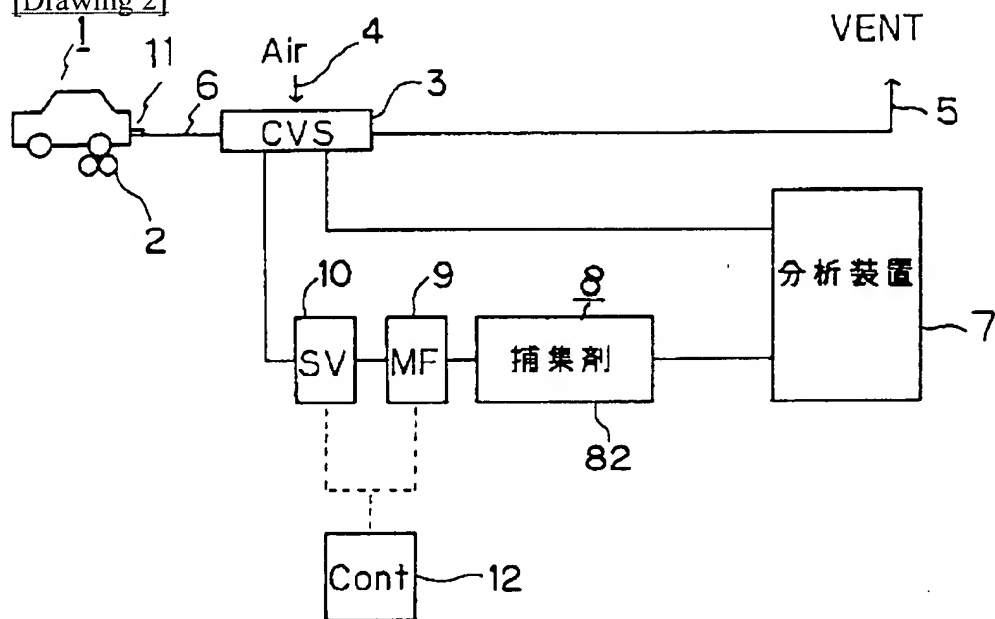
[Drawing 3]



[Drawing 5]

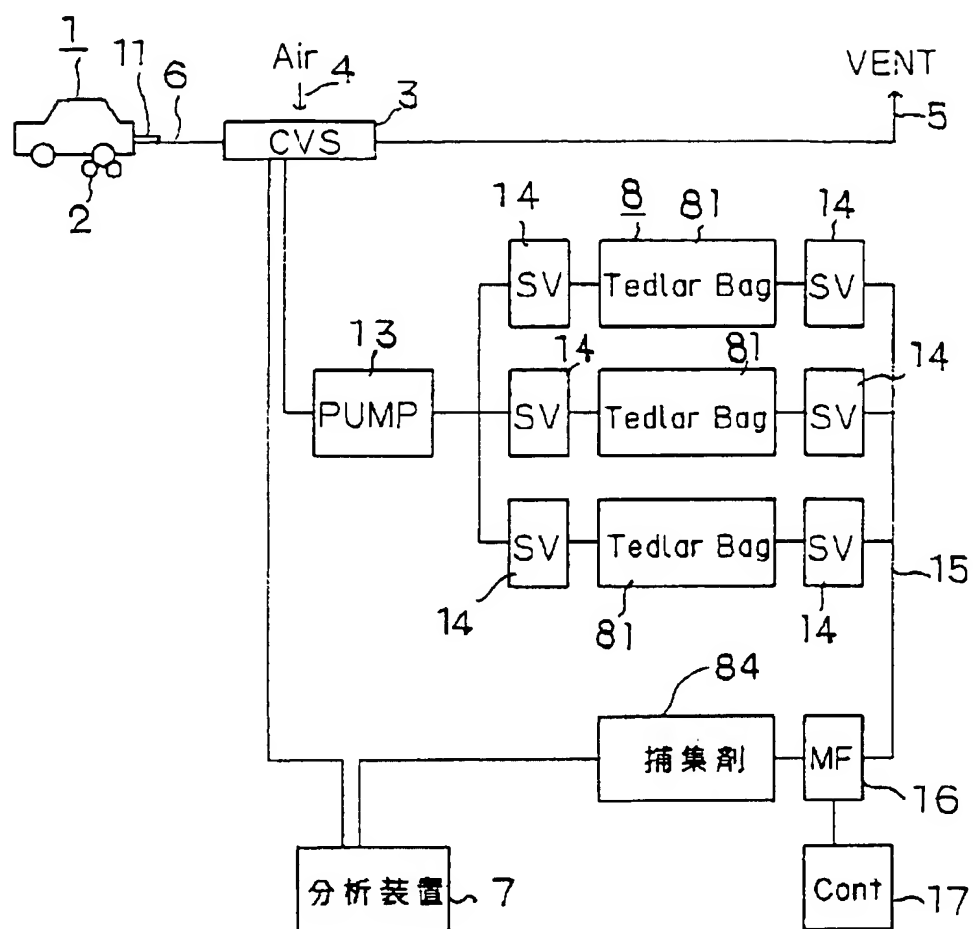


[Drawing 2]



[Drawing 4]





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